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### Deposited in DRO:

25 January 2011

### Version of attached file:

Accepted Version

### Peer-review status of attached file:

Peer-reviewed

### Citation for published item:

Schyns, B. and Croon, M.A. (2006) 'A model of task demands, social structure, and Leader-Member Exchange and their relationship to job satisfaction.', *International journal of human resource management.*, 17 (4). pp. 602-615.

### Further information on publisher's website:

<http://dx.doi.org/10.1080/09585190600581378>

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A model of task demands, social structure, and Leader-Member Exchange and their  
relationship to job satisfaction

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Keywords: Social Structure, Job Satisfaction, Task Demands, Leadership, Leader-Member  
Exchange

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A model of task demands, social structure, and Leader-Member Exchange and their  
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Abstract

In the present study, we examined task demands, Leader-Member Exchange, and social structure in their relationship to job satisfaction. Based on the reflections of Seers and Graen in their dual attachment model, in the present study we combined task demands, Leader-Member Exchange, and social structure in a model of antecedents of job satisfaction. The resulting model was tested using structural equation modelling. While task demands and Leader-Member Exchange are related to their respective equivalents in job satisfaction, social structure is positively related to a latent factor job satisfaction, indicating that the social structure of a job has an impact on different facets of job satisfaction. The results are discussed with respect to sample characteristics.

## Introduction

The examination of job satisfaction has a long tradition, starting with Hoppock's study in 1935 and continuing to the present day, as can be seen in recent studies (e.g., Shirmer & Lopez, 2001) and meta-analyses (e.g., Judge & Bono, 2001). There are three main areas of research into job satisfaction: first, job satisfaction is regarded as an *antecedent of organizational outcomes* such as performance (see meta-analyses by Iffaldano, & Muchinski, 1985, and by Six, & Eckes, 1991), turnover (e.g., Griffeth, Hom, & Gaertner, 2000; Mobley, 1977; Williams, & Hazer, 1986), and organizational citizenship behavior (e.g., Organ, & Ryan, 1995). Second, job satisfaction is regarded as an *outcome of organizational conditions* such as, for example, leadership (e.g., Podsakoff, MacKenzie, & Bommer, 1996; Schriesheim, Neider, Scandura, & Tepper, 1992; Sparks, & Schenk, 2001), sex of leader (e.g., Trempe, Rigny, & Jacoun, 1985), social support (Frone, 2000; Liden, Wayne, & Sparrowe, 2000; Sargent, & Terry, 2000; Schirmer, & Lopez, 2001; Stepina, Perrewe, Hassell, Harris, & Mayfield, 1991), and task characteristics (Dodd, & Ganster, 1996; Seers, & Graen, 1984; Stepina et al., 1991). Third, job satisfaction is regarded as a *disposition influenced by personality traits* (e.g., Dormann, & Zapf, 2001; Judge, & Bono, 2001; Judge, Bono, & Locke, 2000; Judge, Locke, Durham, & Kluger, 1998).

The focus of our study was on job satisfaction as an outcome of organizational variables, namely task demands, leadership, and social structure. Task demands are defined as task complexity and autonomy as well as learning possibilities provided by a task. In short, demanding tasks are those tasks that are regarded as personality enhancing by action core theory (e.g., Frese, & Zapf, 1994; Hacker, 1998). With respect to the social structure of a work place, we take into account personal contacts that employees have. We assume that the contact persons serve as a possible source of support of the respective employee. Thus, social

structure is defined in this study as a combination of positive relationships between the employee and colleagues as well as supervisors. In addition, we will examine a special kind of leadership in its relation to job satisfaction: Leader-Member Exchange (LMX) is a dyadic and interactional approach to leadership and focuses on the relationship quality between leader and member (e.g., Graen, & Uhl-Bien, 1995).

The aim of this study was to combine task demands, social structure, and LMX and examine their relative effects on job satisfaction. Until now, most of the research into task demands or task characteristics in general, social structure, and LMX in relation to job satisfaction has been done in the USA (see Graen, Novak, & Sommerkamp, 1982; Seers & Graen, 1984; but see also de Jonge, Dormann, Janssen, Dollard, Landeweerd, & Nijhuis, 2001 for a study in the Netherlands). Our study sought to replicate the findings from US studies in a European work context. In addition, prior research has been done with samples of federal agencies (Seers, & Graen, 1984), public service organizations (Graen, Novak, & Sommerkamp, 1982), and health care professionals (see Jonge, Dormann, Janssen, Dollard, Landeweerd, & Nijhuis, 2001). Most of the prior studies are based on the data of only one organization, respectively. The present study extends this research to the sector of blue and white collar workers working at low levels of organizational hierarchy and employed in different kinds of organizations. In addition, the predictors of job satisfaction are combined into a structural equation model to test for relative effect on job satisfaction.

### *Job Satisfaction and Task Demands*

Several studies have shown the existence of positive relationships between different task characteristics and job satisfaction. More specifically, the following characteristics have been found to relate positively to job satisfaction: autonomy and variety (Dodd & Ganster, 1996), (positive) task characteristics in general (Stepina et al., 1991), task variety (Zaffane, 1994),

task clarity and significance (Ting, 1997), and task responsibilities (Blau, 1999). In the following section, some of the results of these studies are reported with respect to the relationship between task demands and job satisfaction. As task demands are defined in this study as task complexity, autonomy, or learning possibilities, we will analyse the reported studies with respect to these facets only. As task variety is considered as similar to task complexity, we will review results on this facet as well.

In a laboratory study, Dodd and Ganster (1996) examined the interactive effects of variety, and autonomy on job satisfaction. In Pearson correlations, objective task variety ( $r = .19$ ), objective task autonomy ( $r = .30$ ), perceived task variety ( $r = .48$ ), and perceived task autonomy (.40) related positively to job satisfaction. A similar result is reported by Stepina et al. (1991) who examined the relationship between job characteristics (task variety, task identity, task significance, autonomy, and feedback) and job satisfaction. The authors only report the correlation between an overall measure of task xx and job satisfaction. This was positive ( $r = .55$ ). Most of the relationships to facets of job satisfaction were smaller but still positive (pay satisfaction:  $r = .07$ ; security satisfaction:  $r = .19$ ; social satisfaction:  $r = .36$ ; superior satisfaction:  $r = .24$ ; growth satisfaction:  $r = .65$ ).

These studies demonstrate that the higher demands connected with a task (e.g., complexity, autonomy) the higher the satisfaction of the employees. This is especially true with respect to employees' perception of task demands (Dodd, & Ganster, 1996). The higher correlations for perceived task demands can, on the one hand, be due to common method variance, or, on the other hand, be ascribed to the fact that the employees' interpret their tasks (Hackman, 1970). An interpreted task is then more highly related to job satisfaction than is the objective task.

*Job satisfaction and Leader-Member Exchange*

Several studies have focused on leadership and job satisfaction (e.g., Podsakoff, MacKenzie, & Bommer, 1996; Schriesheim, Neider, Scandura, & Tepper, 1992; Sparks, & Schenk, 2001) or on superior and/or co-worker support and job satisfaction (e.g., Bradley, & Cartwright, 2002; Ducharme, & Martin, 2000; Sargent, & Terry, 2000; Shirmer, & Lopez, 2001). In the following, we will first concentrate on leadership and its relation to job satisfaction and then on the social structure of a work place and job satisfaction.

One leadership approach that focuses especially on the relationship quality between leader and member is the LMX-approach (e.g., Dansereau, Graen, & Haga, 1975). We consider this approach to be especially relevant with regard to job satisfaction as we assume that more than any leadership style the relationship with the supervisor is of relevance for employees satisfaction. Several studies show the positive relationship between LMX and satisfaction (e.g., Schriesheim et al., 1992; Schyns, 2002; Stepina et al., 1991). In a meta-analysis, Gerstner and Day (1997) show a high relationship between LMX and satisfaction, especially between LMX and satisfaction with the supervisor.

### *Job Satisfaction and Social structure*

In addition to leader behavior and quality of leader-member relationship, the relationships with colleagues are part of social structure at the work place and assumed to influence job satisfaction. As mentioned above, we define social structure as being composed of the relationships an employee has with colleagues and superiors. In the following, we will shortly review some relevant studies on that topic. Sargent and Terry (2000) focused on the effect of superior and co-worker support on job satisfaction. In their longitudinal study, superior and co-worker support both influenced job satisfaction positively, but to different degrees. Whereas the correlation of superior support (t1) to job satisfaction (t2) was  $r = .12$ , that of co-worker support (t1) to job satisfaction (t2) was  $r = .40$ , thus indicating that co-worker support

was more highly related to job satisfaction in this sample. Similarly, Schirmer and Lopez (2001), who concentrated on the relationship between supervisor support and job satisfaction, found supervisor support to be positively related to job satisfaction ( $r = .49$ ).

### *Task Demands, Social structure, and Job Satisfaction*

Having concentrated so far on the single relationships between predictors and job satisfaction, we will now review research that has combined several variables in predicting job satisfaction.

Seers and Graen (1984; see also Graen, Novak, & Sommerkamp, 1982) established a model combining task characteristics and Leader-Member Exchange in their relationship to job satisfaction. Leader-Member Exchange was positively related to overall job satisfaction and facets of job satisfaction. In addition, both Leader-Member Exchange and task characteristics were found to add to job satisfaction in a complimentary way. In general, Stepina et al. (1991) replicated these findings.

A similar but more complex model was established by de Jonge et al. (2001). Controlling for gender, age, and negative affectivity in a sample with nurses, they found a negative relationship between task demands (time pressure, hard work, complexity) at Time 1 and job satisfaction at Time 2, and a positive relationship between workplace social support (by supervisor and by colleagues) at Time 1 and job satisfaction at Time 2. Job autonomy[1] did not have an impact on job satisfaction. On the basis of these empirical findings, we propose the model presented in the following section.

### *Model of Job Satisfaction*

Several studies have shown that task demands, social structure, and Leader-Member Exchange are positively related to job satisfaction. In the dual attachment model (Seers, & Graen, 1984), two factors (task characteristics and LMX) were combined in order to evaluate



their complementary influence on job satisfaction. In the present study, the aim was to extend this model adding social structure to the prediction of job satisfaction. In different organizational contexts, these factors might enhance job satisfaction to differing degrees, depending on, for example, the task that employees have to fulfil or the strength of the organizational structure. Thus, the results obtained by Seers and Graen (1984) and – in part – those obtained by de Jonge et al. (2001) should be replicated and extended in a heterogeneous sample rather than in a one-organization sample.

To this end, the results of former correlation- and regression-based research were integrated in a model of job satisfaction antecedents (see Figure 1). Task demands related to job satisfaction in a positive way. The same was true for social structure and Leader-Member Exchange. Job satisfaction is defined as consisting of several facets (satisfaction with superior, with colleagues, with task, and with job conditions), as is common in job satisfaction studies (see e.g., Law, & Wong, 1999; Yousef, 2000). In addition to a replication of results of prior research, this model makes it possible to estimate the relative influence of task demands, LMX and social structure on job satisfaction. As an extension to the dual attachment model (Seers, & Graen, 1984), not only was Leader-Member Exchange taken into account but also social structure with respect to co-workers and supervisors.

-- Insert Figure 1 about here --

## Method

### *Sample*

The sample consisted of 326 employees at low levels of the organizational hierarchy (i.e., employees with no supervisory function or only one level of employees below them, that is, first and second hierarchy level seen from bottom-up). Most employees (N = 304) worked in companies in East Germany (former GDR). The questionnaire was distributed in 13

companies. The number of employees that filled out the questionnaire in the companies ranged from 5 to 170 (in the latter case, different branch plants of one organization were assessed). The organizations belonged to different sectors such as telecommunication, underground engineering, bookbinding, brewery, and automotive component suppliers. One-hundred-and-twenty-four of the participants were female and 196 were male (six persons did not indicate their sex). The average age was 39 years (SD 9.6, range 18 to 60).

### *Procedure*

Most questionnaires (N = 275) were administered to the participants during work hours. They were filled out in the presence of the first author. She explained the aim of the study and assured participants that the data would be treated confidentially. It was also explained that the study was conducted in agreement with, but independent of, the upper management. The questionnaires were collected immediately after the session.

The remaining questionnaires (N = 51) were distributed by superiors and sent to the first author by the participants or were collected by her. The first page of the questionnaire contained the same information as was given to the other participants verbally (aim of the study, confidential treatment of data). The participants from these companies did not differ significantly from the others as regards age or organizational tenure. T-tests were done to check for differences in the dependent and independent variables. Taking into account the number of test and adjusting the alpha level accordingly ( $p = .05/7 = .007$ ) no difference becomes significant. Thus, the samples can be regarded as alike and will be analysed together.

### *Instruments*

*Task demands* were assessed using an instrument designed by Mohr, Schyns, and Rigotti (2000) which is based on the action core theory (e.g., Frese, & Zapf, 1994; Hacker, 1998). Using a 5-point scale, employees evaluate how demanding they experience their present

tasks. The scale consists of seven items (see appendix). The scale ranges from 1 = *applies completely* to 5 = *does not apply at all*. The instrument had an internal consistency (Cronbach's alpha) of  $\alpha = .69$ . [2]

*Leader-Member Exchange* is assessed using the LMX 7, an instrument recommended by Graen and Uhl-Bien (1995; German translation: Schyns, 2002). A sample item is: "How well does your leader understand your problems and needs?". The scale ranges from 1 to 5 with different verbal anchors that fit the respective question. The internal consistency (Cronbach's alpha) in this study was  $\alpha = .89$ .

*Social structure* (Rigotti, 2002) consisted of four items. The participants were asked to evaluate the social structure in their present working situation on a 5-point scale. A sample item is "At my present workplace, I am accepted by my colleagues". Similar to the scale assessing task demands, this scale ranges from 1 = *applies completely* to 5 = *does not apply at all*. The four items had an internal consistency (Cronbach's alpha) of  $\alpha = .61$ .

*Job satisfaction* was measured by combining the evaluation of four facets: satisfaction with the *superior* (12 items; e.g., fair, active), with *colleagues* (8 items; e.g., nice, lazy), with the *task* (12 items; e.g., boring, responsible) and with *job conditions* (11 items; e.g., noise, dirt). This instrument is based on the Job Description Survey (Hackman, & Oldham, 1975) and was adopted for use in Germany by Neuberger and Allerbeck (1980). The scales range from 1 = *yes*, 2 = *rather yes*, and 3 = *rather no*, to 4 = *no*. The internal consistencies (Cronbach's alpha) were  $\alpha = .91$ ,  $\alpha = .83$ ,  $\alpha = .88$ , and  $\alpha = .87$ , respectively.

## Results

### *Handling of missing data and descriptive statistics*

Of the 326 subjects in the original sample, seven subjects who had missing data on all seven scales used in this study were removed from the sample. In the remaining sample 50 subjects

still had at least one missing score: 27 subjects had one missing score, 16 subjects had two missing values, six subjects had three missing values, and one subject had four missing values. In total, 81 scores were missing which is 3.6 % of the total number of potential scores.

Since listwise deletion of subjects with missing scores would further reduce sample size by 50 units, it was decided to impute the missing scores by using the regression approach as implemented in the Missing Value Analysis (MVA) procedure of SPSS 11.5. In this approach each missing value on a particular variable is replaced by its expected value that is based on an appropriate regression analysis (Little, & Rubin, 2002). In order to prevent underestimation of the variances and covariances of the variables, a randomly chosen regression residual was added to each imputed score.

Table 1 contains the means and standard deviations of the scale scores after imputation of the missing values. Table 2 contains the correlations among the seven scales.

-- Insert Tables 1 and 2 about here--

The correlations were all positive, and all, except one, were statistically different from zero. For *task demands*, they ranged from  $r = .056$  to  $r = .402$ . The highest correlation was found to *satisfaction with the task*, i.e., the conceptually closest construct. For *Leader-Member Exchange*, correlations ranged from  $r = .147$  to  $r = .701$ . The highest correlation was to *satisfaction with the superior*, which was also the conceptually closest construct (see also van Breukelen & Konst, 1997; Gerstner & Day, 1997). For *social structure*, the correlations ranged from  $r = .226$  to  $r = .574$ , the highest being to *satisfaction with the supervisor*, which is a conceptually close dimension of job satisfaction and *satisfaction with the task*.

This preliminary analysis gives some support to the assumption of construct validity of the constructs used here, as the correlations between the constructs were always highest for the conceptually closest constructs.

*Structural equation modelling*

Figure 1 gives a graphical representation of the structural equation model that will be tested in the following analyses.

This model assumes that the scores on a latent satisfaction variable  $F$ , which is measured via the four indicator variables satisfaction with the supervisor, satisfaction with colleagues, satisfaction with the task, and satisfaction with job conditions, are causally determined by the three exogenous variables task demands, Leader-Member Exchange, and social structure. Since none of these three exogenous variables is assumed to have a direct effect on each of the satisfaction indicators, the latent variable  $F$  acts as a mediating variable between the exogenous and indicator variables. This MIMIC model (Multiple Indicators Multiple Causes) consists of a structural part that describes the effects of the exogenous variables on the latent satisfaction variable, and a measurement part that describes how the latent variable is related to its indicators. In the terminology of Bollen and Lennox (1991) and of Jarvis e.a. (2003) the four satisfaction measurements are reflective indicators for the latent satisfaction construct, whereas the three exogenous variables can be considered as formative indicators for that construct. The package AMOS 5.0 was used to fit and test several structural models (Arbuckle, & Wothke, 1999).

In a first step the measurement part of the model was investigated by testing whether the covariance among the four indicators could be explained by a single factor model. This measurement model provided an excellent fit to that part of the data: the analysis yielded a chi-square value of 1.137 with  $df = 2$  and  $p = .566$  ( $TLI = 1.019$  and  $RMSEA = .000$ ). The standardized factor loadings of the four indicator variables are shown in Table 3.

-- Insert Table 3 about here--

All four indicators are clearly related to the latent variable with job satisfaction with the satisfaction with the task apparently being the best indicator of the underlying construct.

In a second step the integrated model as depicted in Figure 1 was tested. It had to be rejected since the analysis yielded a chi-square value of 100.930 with  $df = 11$  and  $p = .000$ . Moreover the descriptive fit indices TLI and RMSEA attained unacceptable values for this model:  $TLI = .706$  and  $RMSEA = .160$ . Hence, the model in which the latent variable  $F$  acts as a mediating variable between the three exogenous variables and the six indicators does not fit. Since in the previous analysis the measurement part of the model was found to be satisfactory, the bad fit of the complete model probably originates in its structural part.

Inspection of the modification indices provided by this analysis suggested that some direct effects of the formative on the reflective indicators should be added to the model. On substantive ground direct, non mediated effects from task demands to satisfaction with the task and from LMX to satisfaction with the supervisor were added to the model. Hence, direct effects were added between the conceptually closest concepts. The ensuing model fit the data very well with a chi-square value of 57.831 with  $df = 10$  and  $p = .239$  ( $TLI = 0.990$  and  $RMSEA = .030$ ). Moreover, this model could be further simplified since the path coefficients of the exogenous variables task demands and LMX on  $F$  were no longer significant. Setting these path coefficients equal to zero lead to the final model that is shown in Figure 2.

-- Insert Figure 2 about here --

Figure 2 also gives the estimates of the standardized regression coefficients and factor loadings. All the coefficients reported in this figure were highly significant at the 1 % level and could not be removed from the model without resulting in a non-fitting model. All four satisfaction variables remain excellent indicators of the underlying construct, which acts as a mediator between social structure and the four indicator variables. However, the correlation

between the four indicators and the two remaining exogenous variables LMX and task demands are not due to indirect effects mediated by the latent satisfaction variable.

### Summary and discussion

The aim of this study was to further investigate task demands, Leader-Member Exchange, and social structure as they relate to job satisfaction. A model of job satisfaction was introduced which made it possible to estimate the impact of task demands, LMX, and social structure relative to each other as antecedents of job satisfaction.

In preliminary correlation analyses, all correlations but one (satisfaction with colleagues) between the task demands and the different facets of job satisfaction were positive, thus supporting prior research. The highest correlation was found to the conceptually most closely related construct (i.e., satisfaction with the task) , thus confirming the construct validity of the instrument used here. The same holds true for LMX, social structure and job satisfaction: LMX and social structure were both positively related to all facets of job satisfaction. The correlations of LMX and social support were highest for satisfaction with the superior. Although the correlation between social support and satisfaction with the task was higher than that to satisfaction with colleagues, the correlations can serve as indicators of the validity of the instruments used here. In addition, overall job satisfaction was assessed using four indicator variables, that is, satisfaction with the supervisor, satisfaction with colleagues, satisfaction with the task, and satisfaction with job conditions. A test of the measurement model showed that general satisfaction is adequately measured by these four indicator variables.

A model including task demands, LMX, and social structure as predictors of overall job satisfaction had to be rejected on the basis of the fit indices. Allowing for direct effects of the variables that were conceptually closest, task demands and satisfaction with the task and

LMX and satisfaction with the supervisor, lead to a well-fitting model. We can, therefore, conclude that satisfaction with the superior and with the tasks is determined by LMX and task demands, respectively. Social structure in contrast has an effect on overall satisfaction. This result is extremely interesting and has some implications for the organizational practice. Although LMX has been found to be related to overall job satisfaction, we could not replicate this finding in our sample. In our model, LMX was only substantially related to satisfaction with the supervisor. This relationship itself is of course not surprising as the two variables are conceptual similar. But why does LMX not relate to overall job satisfaction? We would have expected that the quality of the relationship has an impact on overall job satisfaction as LMX has, for example, been shown to be related to delegation (Yukl, & Fu, 1999), which influences other components of the job and, therewith, overall job satisfaction. We can only speculate that the leaders of our participants, being on low levels of the organizational hierarchy, may not have much power to influence their followers' jobs in general.

Task demands did not relate to overall job satisfaction as well whereas social structure did. We may be able to explain this with a special characteristic of our sample. The study took place in a region with high unemployment. Employees might feel they should adapt even to poor working conditions in order to avoid unemployment. Particularly in times of low employment rates and job insecurity, social resources are needed and become more important. Getting along with one's superior might reduce the fear of losing one's job. Also, the support of colleagues might help one to overcome negative effects due to an unsatisfying task. In addition, many employees that participated in this study might have experienced the suspension of colleagues. Experiences like this might encourage colleagues to "stick together". This notion is supported by different studies, which show that social support is helpful in coping with job strains (e.g., Karasek, Gardell, & Lindell, 1987).



## Limitation, applications, and future research

One limitation of the study is the type of data: all data were based on self-report. This is clearly a strong limitation. Still, as the dependent variable was job satisfaction, it is important to note that the workers' perceptions of the actual working conditions are more relevant than the objective conditions. From prior research, it is known that even workers with poor working conditions report high levels of job satisfaction, a phenomenon known as resignative job satisfaction (Bruggemann, Grosskurth, & Ulich, 1975). Based on the results of Rosse and Miller (1984, see also Miller, & Rosse, 2002), adaptation to poor working conditions is possible. Thus, although research hints at the negative consequences of such working conditions (see, e.g., Volpert, 1985), for job satisfaction, the perceived conditions are more relevant than the objective conditions. Of course, it would be interesting to see if more objective data (e.g., measuring task demands through task analysis) would lead to the same results as found here. In addition, the sample mainly consisted of employees in a region of high unemployment. In other regions, the results might be different, thereby limiting generalizability.

The sample consisted of employees at low levels of the organizational hierarchy. This might influence the relative importance of social structure for job satisfaction. As the task demands are generally low in such a sample, tasks are not satisfying in and of themselves. Thus, social structure become more important for overall job satisfaction.

The limitations mentioned have implications for the use of the results in companies: if the results can be replicated, companies should - especially in times of low employment - provide supportive social structure in order to increase employees' overall job satisfaction. For other facets of job satisfaction it seems more important to focus on the respective aspect of the job.

One may speculate on how the limitations here, stemming from sample characteristics, influenced the results of this study. Whereas in this sample, social structure were of more impact for overall job satisfaction than were task demands of LMX, this may be different in different samples. An example might be samples with higher levels of education and thus higher task demands. Here, the social structure might be of less importance for job satisfaction as long as tasks are of good quality and satisfying enough in themselves. For remote jobs (e.g., virtual teams), the social structure might be of even more importance for job satisfaction as employees may suffer from isolation. Thus, the model introduced here may lead to different results depending on the tasks the participants have to fulfil and on the social structure they face in their jobs. A replication of the model using different samples would thus permit a comparison of results for specific samples.

Another limitation is the cross-sectional design of the study. In future research, longitudinal studies will be necessary to examine if task characteristics and social structure are necessary antecedents of job satisfaction. In a cross-sectional study, one might also speculate that employees who are satisfied with their jobs contribute positively to the social structure in their work groups.

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Table 1: Means and standard deviations for scales after regression imputation of missing scores

Scale	M	SD
Task demands	3.41	.73
Leader-Member Exchange	3.20	.76
Social structure	4.00	.65
Satisfaction with the supervisor	3.24	.54
Satisfaction with colleagues	3.48	.41
Satisfaction with the task	3.32	.47
Satisfaction with job conditions	2.91	.57

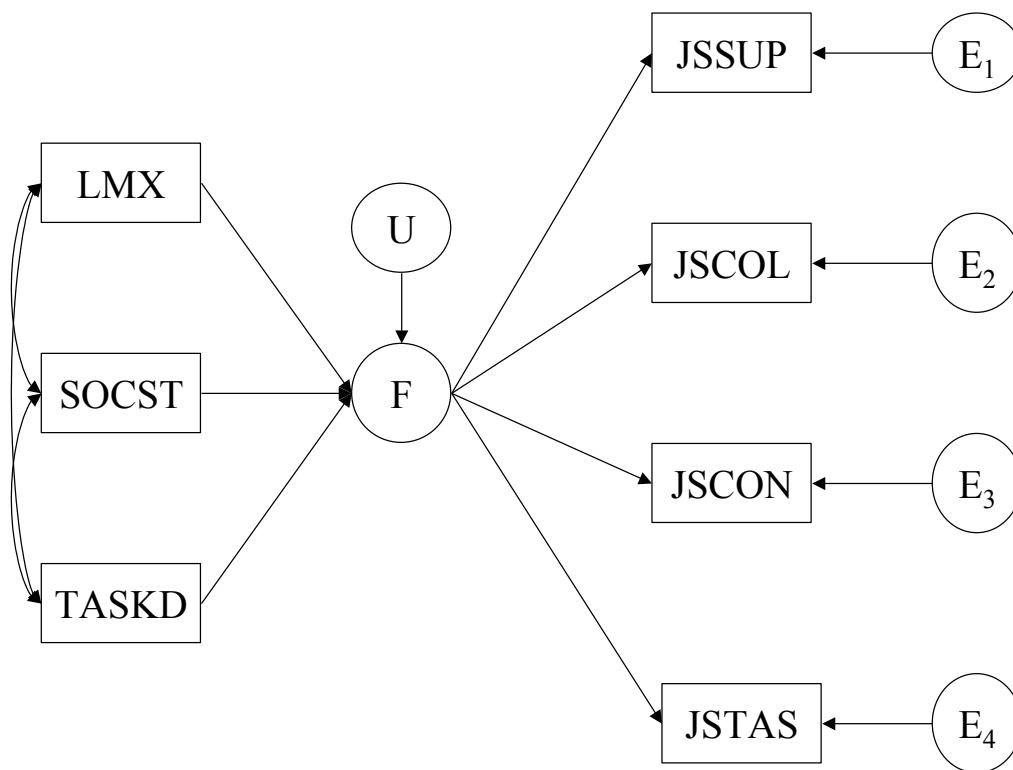
Table 2: Correlation among seven scales after regression imputation for missing scores

	Task demands	Leader-Member Exchange	Social structure	Satisfaction with the supervisor	Satisfaction with colleagues	Satisfaction with the task
Leader-Member Exchange	.162**					
Social structure	.226**	.574**				
Satisfaction with the supervisor	.138*	.701**	.568**			
Satisfaction with colleagues	.056	.147**	.299**	.271**		
Satisfaction with the task	.402**	.304**	.408**	.359**	.343**	
Satisfaction with job conditions	.132*	.226**	.241**	.294**	.212**	.301**

Note: \* = significant at 5 % level two-sided; \*\* = significant at 1 % level two-sided

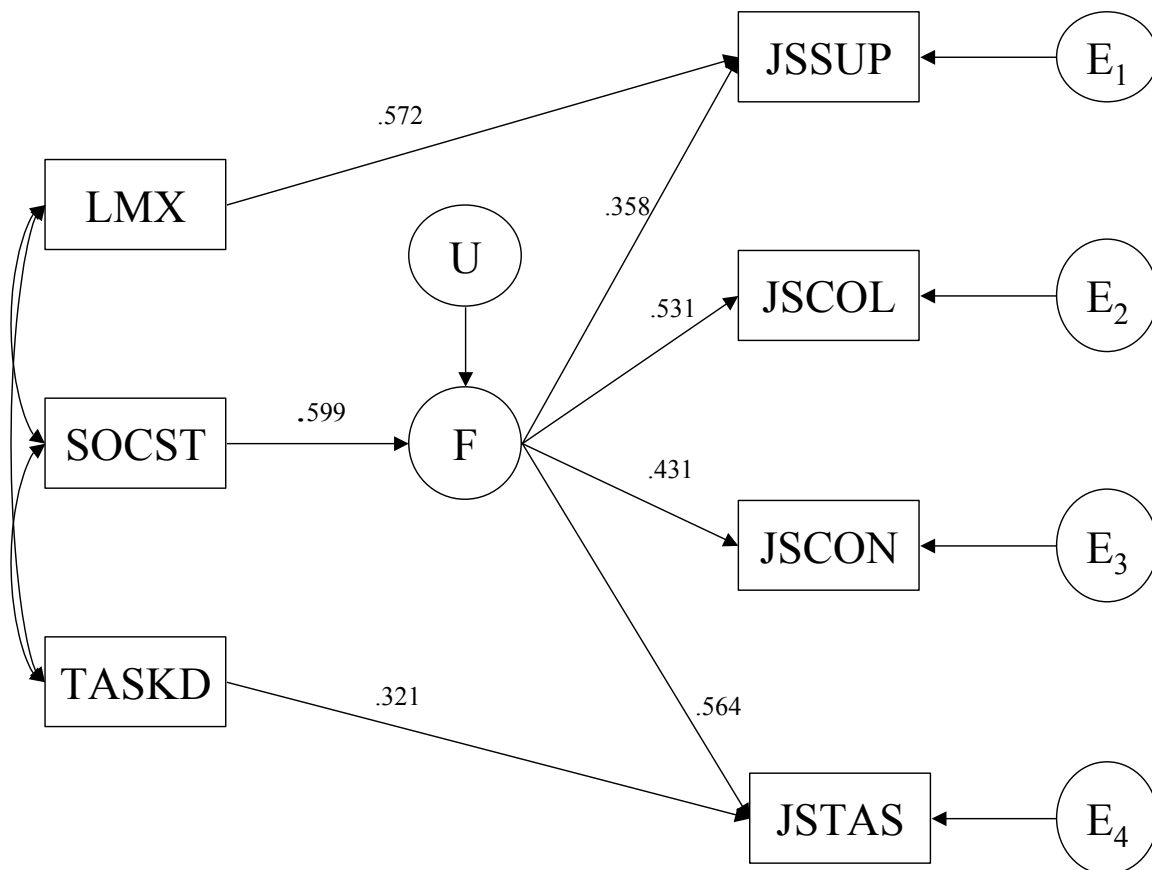
Table 3: Standardized factor loadings of the four indicator variables

Satisfaction component	Factor loading
Satisfaction with the supervisor	.564
Satisfaction with colleagues	.497
Satisfaction with the task	.653
Satisfaction with job conditions	.472



Note: LMX = Leader-Member Exchange; SOCST = Social structure; TASKD = Task demands; JSSUP = Satisfaction with the supervisor; JSCOL = Satisfaction with colleagues; JSCON = Satisfaction with job conditions; JSTAS = Satisfaction with the task

Figure 1: Relationship between Task Demands, Social structure, and Job Satisfaction



Note: LMX = Leader-Member Exchange; SOCST = Social structure; TASKD = Task demands; JSSUP = Satisfaction with the supervisor; JSCOL = Satisfaction with colleagues; JSCON = Satisfaction with job conditions; JSTAS = Satisfaction with the task; E = Errors on manifest variables; U = Error on latent variable

Figure 2: Structural Equation Model of Job Satisfaction

Appendix: Items for the assessment of task demands

At my present work place,

... I always do the same things.

... I have to look for solutions myself in order to complete my work.

... I always have to learn something new

... I can plan the course of my work myself.

... I am responsible for finishing a product from beginning to end.

... I give instruction to others.

... I am responsible for the results for my work.

## Footnotes

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<sup>1</sup> Although the term the authors use here is “job autonomy”, the assessment actually refers to the “worker’s opportunity to determine a variety of task elements...” Thus, job autonomy in this case equals task autonomy.

<sup>2</sup> Although some of the Cronbach’s alpha values are not impressively high, they are all acceptable if we take into account the number of items in each scale. If it is assumed that the  $m$  items in a homogeneous scale should have correlations of at least 0.25 with each other, one may prove that Cronbach’s alpha should be at least  $m/(m+3)$ . Although this result is derived under the assumption that all items are mutually exchangeable, the criterion that Cronbach’s alpha should be larger than  $m/(m+3)$  seems to work very well in practice. In the present study all scales satisfied the criterion. One should realize of course that this rule only states a minimum requirement on Cronbach’s alpha and that in general one should strive at values that are much larger than this lower bound.